

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

Claims 1-44 were pending in this application. Claims 1-34 have been canceled, claims 35-44 having been previously elected during a telephone conversation between a former representative and the Examiner. Therefore, claims 35-44 will be pending in this application upon entry of this Amendment.

Applicants have amended claims 35, 38, 39, 42, 43, and 44 to correct matters of form and to more clearly recite features of the present invention. Support for the amendment to each of the claims can be found, for example, at page 12, paragraph [0035] and page 22, paragraph [0048] to page 23, paragraph [0051] of the present application. Further, Applicants have amended Figures 4 and 5B and the specification to ensure that each element shown in the drawings is described in the specification. For the reasons stated below, Applicant respectfully submits that all claims pending in this application are in condition for allowance.

In the Office Action mailed July 12, 2004, Figures 4, 5B, 7, and 9 were objected to for informalities and the specification of the application was objected to under MPEP §2164.08(a) and 35 U.S.C. 112, first paragraph. Further, claims 35-37 and 39-42 were objected on formal grounds. Claims 42, 43, and 44 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claims 42 were further rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Additionally, claims 35-37 and 39-42 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6553516B1 to Suda ("Suda"). Finally,

claims 38, 43, and 44 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,598,202 B1 to Kim et al. ("Kim"). To the extent these rejections might still be applied to claims presently pending in this application, they are respectfully traversed.

As stated, Applicants have made changes to the specification and drawings. It is believed that these changes fully address the issues raised in the Office Action.

The amendment made to claim 42 specifies that the intra-block and inter-block permutations are performed simultaneously after being initiated. This amendment has support in, for example, Figure 5A, which depicts that a first inter-block permutation is performed, initially, after a first intra-block permutation, but all subsequent inter-block permutations are performed at the same time as intra-block permutations. Thus, it is believed that amended claim 42 addresses the concerns raised with respect to the 112, second paragraph, rejection. Also, claims 38 and 43-44 have been amended to be dependent from claims 35 and 39, respectively.

Turning now to the art-based grounds of rejection, Applicants point out that independent claim 35, as amended, recites, among other things, means for sequentially performing intra-block permutations on the sequence of M sub-blocks in a block-by-block manner to produce an intra-block permute sequence by re-ordering the symbols within each sub-block of the sequence of M sub-blocks, and means for performing inter-block permutations, once the intra-block permutation is initiated, on the intra-block permuted sequence of sub-blocks by re-ordering the symbols in each block of the intra-permuted sequence of sub-blocks across a number of sub-blocks to form an interleaved output sequence of symbols, wherein the symbols of a K^{th} sub-block in the intra-permuted sequence of sub-blocks are re-ordered across E_K sub-blocks prior to the K^{th} sub-block

and L_K sub-blocks after the K^{th} sub-block, wherein E_K is an integer of $\min(D, K-1)$ and L_K is an integer of $\min(D, M-K)$, and D is half of a permutation spread of the inter-block permutation in the sub-blocks. Similar features are recited in amended independent claim 39.

In the present invention, the intra-block permutation and intra-block permutation can be considered as two permutations performed sequentially. The intra-block permutation can be any block-wise permutation. Furthermore, the inter-block permutation interleaves intra-block permuted sub-blocks with neighboring intra-block permuted sub-blocks and not necessary with all intra-block permuted sub-block.

Neither Suda nor Kim teaches or suggests the features recited in independent claims 35 and 39. In Suda, the sequence permutation data is generated by performing a given operation on elements of a Galois field of a characteristic P , which is described mainly in cols. 5-10. Therefore, Suda fails to teach or suggest at least that "the symbols of a K^{th} sub-block in the intra-permuted sequence of sub-blocks are re-ordered across E_K sub-blocks prior to the K^{th} sub-block and L_K sub-blocks after the K^{th} sub-block, wherein E_K is an integer of $\min(D, K-1)$ and L_K is an integer of $\min(D, M-K)$, and D is half of a permutation spread of the inter-block permutation in the sub-blocks," as recited in claims 35 and 39.

Similarly, the interleaving method described in Kim is different from the present invention. For example, as described in the abstract, Kim's method shifts an information bit existing at the last position of the last group to a position preceding the last position, and selects the groups according to a predetermined order. Accordingly, Kim also fails to teach or suggest the feature that "the symbols of a K^{th} sub-block in the intra-permuted sequence of sub-blocks are

re-ordered across E_K sub-blocks prior to the K^{th} sub-block and L_K sub-blocks after the K^{th} sub-block, wherein E_K is an integer of $\min(D, K-1)$ and L_K is an integer of $\min(D, M-K)$, and D is half of a permutation spread of the inter-block permutation in the sub-blocks," as recited in claims 35 and 39.

Further, in view of the deficiencies of Kim, Applicants respectfully submit that the de-interleaving features recited in dependent claims 38 and 43-44 should be patentable over Kim.

Accordingly, claims 35-44 should be patentable over Suda and Kim at least based on the above reasons.

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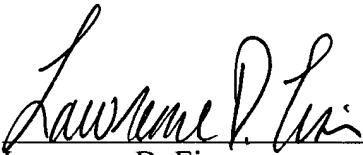
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In view of the foregoing all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone applicants' undersigned representative at the number listed below.

SHAW PITTMAN LLP
1650 Tysons Boulevard
McLean, VA 22102
Tel: 703/770-7900

Date: October 7, 2004

Respectfully submitted,

By: 
Lawrence D. Eisen
Registration No. 41,009

Attachments: Replacement Drawing Sheets

LDE/CYM/dkp

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Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 4 and 5B. These sheets, which include Figs. 4 and 5B, replace the original sheet including Figs. 4, 5A and 5B.

Attachment: Replacement Sheets